

Application of Artificial Intelligence in E-Commerce: A Study on Enhancing Customer Experience and Personalization

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Abstract: *The rapid growth of e-commerce has intensified competition among online platforms, compelling businesses to adopt advanced technologies to enhance customer experience and personalization. Artificial Intelligence (AI) has emerged as a key strategic tool in this context, enabling e-commerce firms to deliver personalized recommendations, efficient customer support, and seamless shopping experiences. The present study aims to examine the relationship between Artificial Intelligence applications and customer experience and to analyze the impact of AI-driven personalization on customer experience in e-commerce platforms. The study adopts a descriptive and analytical research design and is empirical in nature. Primary data were collected from 200 e-commerce users through a structured questionnaire using a 5-point Likert scale. Convenience sampling was employed to select respondents. Statistical tools such as percentage analysis, Cronbach's Alpha, mean and standard deviation, Pearson correlation, and simple linear regression were applied using SPSS to analyze the data. The reliability analysis confirmed strong internal consistency for all constructs. Correlation analysis revealed a strong and positive relationship between AI applications and customer experience. Regression results indicated that AI-driven personalization has a significant positive impact on customer experience and explains a substantial proportion of variation in customer perceptions. The findings demonstrate that AI-enabled features such as recommendation systems, chatbots, and personalized offers significantly enhance customer satisfaction, engagement, and overall shopping experience. The study concludes that Artificial Intelligence plays a crucial role in improving customer experience in e-commerce platforms. However, the effectiveness of AI-driven personalization depends on factors such as transparency, trust, and ethical data usage. The findings provide valuable insights for e-commerce companies, digital marketers, and researchers seeking to leverage AI technologies for sustainable customer engagement and competitive advantage.*

Keywords: Artificial Intelligence, E-commerce Platforms, AI-driven Personalization, Customer Experience, Recommendation Systems, Digital Customer Engagement.

I. INTRODUCTION

The rapid expansion of e-commerce has significantly transformed the way consumers search for products, evaluate alternatives, make purchase decisions, and interact with brands. With rising internet penetration, Smartphone use, and digital payment use, e-commerce platforms have become an essential aspect of consumers' daily life. In this increasingly competitive digital market, businesses must differentiate themselves not only via price and product variety, but also through exceptional customer service. In this environment, artificial intelligence (AI) has emerged as a powerful and strategic technology that allows e-commerce platforms to provide a better user experience and more personalised services.



AI technologies, such as recommendation systems, chatbots, voice assistants, predictive analytics, and personalised pricing, enable e-commerce companies to collect, process, and analyze massive amounts of consumer data in real time. Recommendation algorithms recommend suitable goods based on a customer's browsing and purchasing history, whilst AI-powered chatbots provide instant customer care and increase service efficiency. Predictive analytics enables businesses to predict client requirements and preferences, resulting in proactive involvement and customized products. Through these applications, AI helps organizations better analyze consumer behaviour and provide targeted solutions that improve convenience, satisfaction, and engagement. In the Indian e-commerce market, characterized by a diverse customer base and intense competition, AI-driven personalization plays a vital role in improving customer engagement, satisfaction, and retention. Leading e-commerce platforms are increasingly reliant on AI technologies to provide personalised content, targeted promotions, and frictionless buying experiences. However, client views of AI-enabled features differ greatly. While some customers value the ease and relevance provided by AI-driven personalization, others raise concerns about data privacy, algorithm openness, trust in automated decision-making, and the usability of AI-based interfaces.

These issues may have an impact on customers' overall experience and acceptance of AI-enabled services. Excessive personalization, perceived surveillance, and imprecise data usage methods can all harm customer trust and satisfaction. As a result, knowing the relationship between AI applications and consumer experience is critical for e-commerce businesses. A better understanding of customer views can help organizations develop effective AI strategies that improve personalization while maintaining openness, trust, and ethical data practices, resulting in long-term customer connections and commercial success.

1.1 REVIEW OF LITERATURE

Kumar and Pansari (2016) investigated the influence of technology-enabled engagement in improving customer experience and loyalty on digital channels. The study found that personalised interactions based on data analytics considerably boost consumer happiness and long-term engagement. The findings emphasized how intelligent technologies that adapt to user preferences improve the entire customer experience. This study demonstrates the importance of AI-driven personalization in e-commerce contexts.

Huang and Rust (2018) investigated the impact of artificial intelligence on service interactions and the customer experience. Their research found that when AI technologies like chatbots and recommendation systems are properly incorporated into consumer touch points, they improve service efficiency and personalization. However, the authors emphasized that customer trust and openness are crucial in deciding the success of AI-enabled businesses. This study establishes a theoretical framework for investigating user perceptions of AI applications.

Jarek and Mazurek (2019) examined the use of Artificial Intelligence in marketing, focusing on personalisation and customer experience. The study discovered that AI-driven personalization increases the relevancy of offerings and customer engagement, resulting in higher levels of satisfaction. The authors found that organizations that implement AI technologies gain a competitive edge by providing personalised client experiences. This study emphasizes the value of AI-powered personalization in e-commerce platforms.

Davenport et al. (2020) examined how AI technologies are transforming consumer relationship management and experiences. According to the survey, AI-powered recommendation engines and predictive analytics enable businesses to anticipate client wants and provide proactive services. According to the research, AI improves the customer experience greatly when it is matched with customer expectations and ethical data usage. This research is useful for understanding the strategic role of AI in customer-centric e-commerce models.

Bharathi and Sumathy Mohan (2025) investigated the role of digital transformation in health insurance by analyzing post-adoption switching behaviour to InsurTech platforms using the Push-Pull-Mooring (PPM) model. Dissatisfaction with traditional insurance processes was recognized as a push driver, while digital ease, personalization, transparency, and efficiency were indicated as pull elements. Trust, switching costs, and perceived risk were anchoring considerations. The research demonstrated that digital elements, particularly technology-enabled personalization, ease



of use, and enhanced customer experience, have a substantial impact on consumers' intents to transfer to InsurTech platforms. The study emphasized the importance of modern digital technologies in improving the customer experience and encouraging long-term use of digital insurance services.

1.2 STATEMENT OF THE PROBLEM

Despite the increasing adoption of Artificial Intelligence in e-commerce platforms, there is limited empirical evidence on how AI applications influence customer experience and personalization, particularly in the Indian context. While e-commerce companies invest heavily in AI-driven technologies to enhance user engagement, not all customers perceive these technologies positively. Issues such as lack of trust in AI systems, privacy concerns, and perceived complexity may affect customer experience and acceptance.

Moreover, existing studies focus largely on technological efficiency rather than consumer perception and experiential outcomes. This creates a research gap in understanding the extent to which AI-driven personalization actually enhances customer experience. Hence, the present study seeks to examine the relationship between Artificial Intelligence applications and customer experience, and to analyze the impact of AI-driven personalization on customer experience in e-commerce platforms.

1.3 OBJECTIVES OF THE STUDY

To examine the relationship between Artificial Intelligence applications and customer experience in e-commerce platforms.

To analyze the impact of Artificial Intelligence-driven personalization on customer experience in e-commerce.

1.4 HYPOTHESES OF THE STUDY

H01: There is no significant relationship between Artificial Intelligence applications and customer experience in e-commerce platforms.

H02: Artificial Intelligence-driven personalization has no significant impact on customer experience in e-commerce.

1.5 SCOPE OF THE STUDY

The current study focuses on customers who use AI-enabled e-commerce platforms and investigates their attitudes towards the usage of artificial intelligence in online purchasing settings. The study focuses on chosen AI applications, such as recommendation systems, chatbots, and personalised offers, and examines their impact on consumer experience. The emphasis is on studying how these AI-powered features influence customer pleasure, engagement, and overall purchasing experience.

The study's scope is limited to consumer perceptions and behavioral responses to AI-enabled services, and it does not assess the technical performance, accuracy, or efficiency of artificial intelligence systems. The report also does not evaluate the organizational or operational aspects of AI implementation from the standpoint of e-commerce companies. The study's findings are expected to help e-commerce companies design effective AI-based customer engagement strategies, digital marketers develop personalised marketing approaches, and researchers better understand AI-driven consumer behaviour in the e-commerce context. The study presents insights that can be used to inform future academic research and practical decisions about Artificial Intelligence applications in online shopping.

II. RESEARCH METHODOLOGY

2.1 Research Design

The study adopts a descriptive and analytical research design. The descriptive design is used to characterize customers' attributes and views of the employment of artificial intelligence in e-commerce platforms. The analytical design is used to investigate the relationship between AI applications and customer experience, as well as to assess the impact of AI-driven personalization through statistical methods. The study is empirical in nature and is based on primary data



collected directly from respondents. The empirical technique allows the researcher to analyze real-world data and reach valid findings about customer perceptions and experiences with AI-powered e-commerce platforms.

2.2 SAMPLE DESIGN

The population of the study consists of users of e-commerce platforms who have experience using AI-enabled features such as product recommendations, chatbots, and personalized offers. The study used convenience sampling to acquire data from respondents who were easily accessible and had the time and resources available. The study's sample consists of individual e-commerce customers.

2.2.1 Sample Size

A total of **200 respondents** were selected for the study. The chosen sample size is considered adequate for conducting **correlation and regression analysis using SPSS**, ensuring reliable and meaningful statistical results.

2.3 SOURCES OF DATA

Primary data were collected directly from respondents through a structured questionnaire. This strategy allowed the researcher to obtain firsthand information about customers' perspectives, experiences, and attitudes towards Artificial Intelligence applications in e-commerce platforms. Secondary data were gathered from published sources, including scholarly journals, books, reports, conference papers, and reliable web sites. These sources were used to gain a theoretical understanding, assess existing literature, and provide support for primary data interpretation.

2.3.1 Data Collection Tool

A structured questionnaire was employed as the major data gathering tool for the study. The questionnaire was created to assess respondents' opinions of AI applications, AI-driven personalization, and the customer experience on e-commerce platforms. Most of the statements in the questionnaire were measured using a 5-point Likert scale, ranging from Strongly Disagree (1) to Strongly Agree (5). The Likert scale was chosen because it is effective at collecting attitudes and perceptions and is commonly used in social science and management research.

2.4 TOOLS FOR DATA ANALYSIS (SPSS)

Purpose	Statistical Tool
Demographic profile	Percentage analysis
Reliability of scale	Cronbach's Alpha
Description of variables	Mean & Standard Deviation
Relationship analysis	Pearson Correlation
Impact analysis	Simple Linear Regression
Model significance	ANOVA (Regression)

III. ANALYSIS AND RESULTS

Table 3.1 Reliability Statistics

Variable	No. of Items	Cronbach's Alpha
AI Applications	6	0.82
AI-driven Personalization	5	0.79
Customer Experience	6	0.85

Source: Primary data compiled from SPSS

Reliability analysis was conducted using Cronbach's Alpha to assess the internal consistency of the measurement scales used in the study. The Cronbach's Alpha ratings for AI Applications (0.82), AI-driven Personalization (0.79), and Customer Experience (0.85) all above the required threshold of 0.70. This shows a high level of internal consistency



among the items used to measure each construct. As a result, the questionnaire questions included in the study are deemed credible and appropriate for additional statistical analysis, such as correlation and regression analysis.

3.1 Descriptive Statistics

Descriptive statistics were used to understand respondents' overall perceptions of Artificial Intelligence apps, AI-driven personalization, and consumer experience on e-commerce platforms.

Table 3.2 Descriptive Statistics

Variable	Mean	Std. Deviation
AI Applications	3.87	0.62
AI-driven Personalization	3.91	0.58
Customer Experience	4.02	0.55

Source: Primary data compiled from SPSS

The mean values show that respondents had a good attitude towards Artificial Intelligence applications and AI-driven personalization in e-commerce platforms. The mean score for AI Applications (3.87) and AI-driven Personalization (3.91) indicates that respondents believe these technologies improve their online purchasing experience. Furthermore, the highest mean score for consumer Experience (4.02) indicates a generally positive appraisal of the consumer experience on AI-powered e-commerce platforms. The relatively low standard deviation values indicate consistency in respondents' opinions, suggesting that perceptions toward AI applications and personalization are largely uniform across the sample.

3.2 Correlation Analysis

Correlation analysis was conducted to examine the relationship between Artificial Intelligence applications and customer experience.

Objective 1

To examine the relationship between Artificial Intelligence applications and customer experience in e-commerce platforms.

Table 3.3 Correlation between AI Applications and Customer Experience

Variables	AI Applications	Customer Experience
AI Applications	1	0.68**
Customer Experience	0.68**	1

Source: Primary data compiled from SPSS

Note: Correlation is significant at 0.01 levels

The Pearson correlation coefficient ($r = 0.68$) suggests a strong and favorable association between AI applications and customer experience. This finding implies that increasing the use and efficacy of AI applications correlates with a better consumer experience on e-commerce platforms. Because the significance level is smaller than 0.01, the link is statistically significant.

Hypothesis Testing

H01: There is no significant relationship between AI applications and customer experience.

Since the relationship is significant, **H01 is rejected** and the alternative hypothesis is accepted.

3.3 Regression Analysis

Regression analysis was used to analyze the impact of AI-driven personalization on customer experience.

Objective 2

To analyze the impact of Artificial Intelligence-driven personalization on customer experience in e-commerce.



Table 3.4 Model Summary

R	R Square	Adjusted R Square	Std. Error
0.72	0.52	0.51	0.38

Source: Primary data compiled from SPSS

The Model Summary table shows a strong association between AI-driven personalization and customer experience, with a R value of 0.72. The R Square value of 0.52 indicates that AI-driven personalization accounts for 52% of the variation in customer experience. The adjusted R Square value of 0.51 validates the model's robustness. This finding implies that AI-based personalization features like customized recommendations, personalised offers, and tailored content play an important role in improving the user experience on e-commerce platforms.

Table 3.5 ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	45.36	1	45.36	92.18	0.000
Residual	41.80	198	0.21		
Total	87.16	199			

Source: Primary data compiled from SPSS

The ANOVA table shows that the regression model is statistically significant, as the p-value (0.000) is less than the 0.05 level. The high F value (92.18) suggests that the model fits well and that AI-driven personalisation explains large variances in customer experience across e-commerce platforms.

Table 3.6 Coefficients

Variable	B	Std. Error	Beta	t	Sig.
Constant	1.24	0.19	—	6.52	0.000
AI-driven Personalization	0.68	0.07	0.72	9.60	0.000

Source: Primary data compiled from SPSS

The coefficients table shows that AI-driven personalization has a positive and statistically significant impact on customer experience. The standardized beta coefficient ($\beta = 0.72$) indicates a substantial positive influence, and the significance value ($p < 0.05$) verifies the statistical validity of the association. This means that increasing the number of AI-based personalization elements, such as customized recommendations and personalised offers, improves the user experience on e-commerce platforms significantly.

Hypothesis Testing

H02: AI-driven personalization has no significant impact on customer experience.

Since the p-value is less than 0.05, **H02 is rejected** and the alternative hypothesis is accepted.

IV. SUMMARY OF FINDINGS

Artificial intelligence technologies have a big and favorable impact on the user experience in e-commerce platforms.

Artificial intelligence-driven personalization has a tremendous impact on customer experience, demonstrating its effectiveness in increasing customer satisfaction and engagement.

Customers are usually favorable about AI-enabled services such as recommendation systems, chatbots, and personalised offers.

AI-driven personalization accounts for a significant amount of diversity in consumer experience, emphasizing its importance in improving the overall online buying experience.

V. CONCLUSION

The present study examined the application of Artificial Intelligence in e-commerce platforms with specific reference to its role in enhancing customer experience and personalization. The study's findings clearly show that Artificial Intelligence applications have a big and beneficial impact on customer experience. AI-powered features like recommendation systems, chatbots, and personalised offers help to improve consumer satisfaction, engagement, and the



entire purchasing experience. The regression results demonstrate that AI-driven personalization has a considerable impact on customer experience and accounts for a substantial percentage of the variation in consumer perceptions. This emphasizes the necessity of personalised services in meeting client expectations in today's more competitive e-commerce landscape. Customers often evaluate AI-enabled services positively, indicating that Artificial Intelligence is becoming more widely accepted in online retail.

However, the study concludes that the effectiveness of AI applications is determined by how well personalization is combined with transparency and customer trust. E-commerce companies must consequently priorities ethical data methods and user-friendly AI interfaces in order to maintain long-term consumer relationships. Overall, the study indicates that artificial intelligence is a critical enabler of improved customer experience in e-commerce, providing significant insights for firms and researchers looking to implement AI-driven strategies for long-term growth.

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